PrintMaster 850 Series
Operator's Manual

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Part Number 5164 Rev. C

This equipment has been tested and found to comply with the limits for a Class A Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emissions as set out by the ICES-003 standard, of the Canadian Department of Communications.

Cet appareil numérique n'émet pas de bruits radioélectroiques depassant les limites de Classe A prescrites dans la norme NMB-003 Édictée par le Ministre des Communications du Canada.

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Specifications are subject to change without notice.

Read all setup and operating instructions before proceeding with operation.

Operate printer only on a firm, solid surface.

Do not operate in an enclosure unless properly ventilated. Make sure no ventilation openings are blocked or obstructed, which may result in the printer overheating.

Do not operate near a heat source.

No user-serviceable parts inside. Refer service or repairs to a qualified service professional.

Use of genuine Printek replacement parts is required to warrant proper, safe operation.

Any alteration or modification of this device voids the user warranty and may make the product unsafe to operate.

The printhead and motors get hot during use. Wait until they cool before touching them.

Make certain the printer is disconnected from A.C. power before removing any covers or performing any required cleaning or maintenance.

Connecting this printer to an ungrounded receptacle can result in electrical shock.

e printer near inflammable or explosive substances. Do not
quid or spill liquid into the printer at any time.

Lesen Sie vor der Inbetriebnahme die Aufbau- und Bedienungsanleitung.

Der Drucker muss zum Betrieb auf einer festen, soliden Oberfläche stehen.

Betreiben Sie den Drucker nicht in einem kleinen, geschlossenen Raum, es sei denn dieser wird ordnungsgemäß belüftet. Achten Sie darauf, dass die Lüftungen nicht blockiert oder versperrt sind, denn dies kann zum Überhitzen des Druckers führen.

Nehmen Sie den Drucker nicht in der Nähe einer Wärmequelle in Betrieb.

Enthält keine Teile, die vom Bediener instandgesetzt werden können. Bitte wenden Sie sich bei Instandsetzung oder Reparatur an qualifiziertes Kundendienstpersonal.

Die Verwendung von echten Printek Ersatzteilen ist notwendig, um ordnungsgemäßen, sicheren Betrieb zu gewährleisten.

Änderungen oder Modifikationen dieses Geräts machen die Garantie ungültig und können den sicheren Betrieb des Produkts gefährden.

Während des Druckens werden Druckerkopf und Motoren heiß. Warten Sie, bis sich die Teile abgekühlt haben, bevor Sie sie berühren.

Vergewissern Sie sich, dass der Drucker nicht mehr an die Stromquelle angeschlossen ist, bevor Sie Abdeckungen abnehmen oder das Gerät reinigen bzw. warten.

Schließen Sie diesen Drucker nicht an eine ungeerdete Steckdose an; dies kann zum Elektroschock führen. Setzen Sie den Drucker niemals in die Nähe von feuer- oder explosionsgefährlichen Stoffen. Betreiben Sie den

Drucker nicht in der Nähe von Flüssigkeiten und lassen Sie keine Flüssigkeiten in den Drucker gelangen.

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INTRODUCTION

Thank you for purchasing a Printek Printer. This printer has been designed to provide years of service handling your most demanding printing requirements.

In addition, an easy to use front panel combined with the ability to store ten different form configurations makes handling multiple forms as simple as a button press for the operator.

Models and Options

The PrintMaster 850 and 850si are rear feed single tractor path, 85 Column printers.

The PrintMaster 852si has both a rear feed tractor path and a bottom feed tractor path.

Models with the "si" suffix (850si, 852si) have a special high impact printhead, which improves deep copy legibility on thick forms. These models also have cooling fans, which allow the printer to run 100% continuous duty cycle without harm.

Options available for all models include:

Ethernet 10/100BaseT Interface (Internal)
Printstand
Setup Module

Manual Contents

**Unless specifically noted, all instructions and information herein is valid for all models in the 85x series.*

- GETTING STARTED provides instructions for installation, setting up the computer interface, installing the ribbon cartridge, loading paper, *and performing a printer self-test*.
- DAILY OPERATION provides more detailed descriptions of the features that are used most frequently. These include the "every day" buttons and indicators on the control panel, selecting or loading new forms, ejecting forms, changing the ribbon cartridge, aligning print with preprinted forms, and causes for common error conditions.
- PRINTER CONFIG**URATION** provides detailed information on how to use Setup to permanently store parameters for each of the ten forms, parameters for the standard and optional interfaces, and parameters for other options.
- FORM CONSTRUCTION AND LAYOUT TIPS provides tips for form construction and layout.
- MAINTENANCE AND TROUBLESHOOTING lists more serious error messages than discussed in the *Daily Operation* section, preventive maintenance, and how to obtain service.
- ADVANCED SETUP FEATURES provides information on how to set menu security.
- USING REMOTE SETUP describes how to "set up" default parameters from a host computer.
- USING THE SETUP MODULE describes how the optional Setup Module can be used to copy Setup parameters from one printer to another or be used to backup your printers' settings.
- PRINTER RESET CONDITIONS describes the state of the printer after power up or reset.

- CONTROL CODE AND ESCAPE SEQUENCE SUMMARIES lists the commands supported for each printer emulation.
- ASCII CHARACTER TABLES show the characters for each character set.
- SPECIFICATIONS list the operating ranges and ratings of the printer.
- GLOSSARY OF TERMS provides definitions for terms used in this manual.

GETTING STARTED

This chapter will use the fewest possible steps to get the first time user up and running quickly. You will be guided through the following steps:

- Finding a suitable location and installing the printer
- Setting up a host interface if necessary
- Installing the ribbon cartridge
- Loading paper
- Performing a printer self-test

Installation

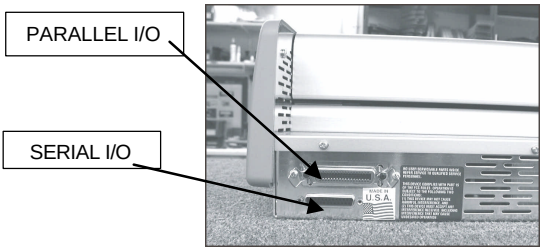
Before installation, a suitable site must be chosen. Suitable sites include offices, computer rooms, and most factory environments. Printek printers have been designed to be rugged, heavy-duty printers. As such, they will handle most harsh environments, but should not be placed in direct sunlight or in areas that will exceed the rated temperature, humidity, or power requirements. For details, refer to "SPECIFICATIONS" on page 92.

Once a site has been selected, the printer should be placed on a countertop, desk or Printek Printstand.

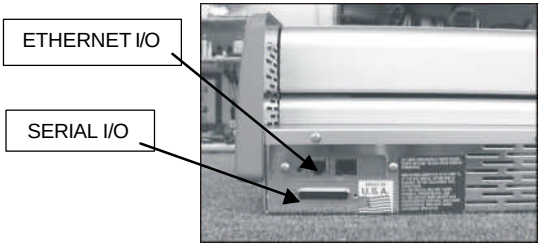
The printstand should be located in an area large enough to provide easy access to both the front of the printer and the rear for accessing printed output. Unpack the printer as described in the "PrintMaster 850/850si/852si Unpacking Instructions" and place the printer on the printstand or counter top.

Caution: Before connecting power, make sure that all shipping materials have been removed. These materials include an internal brace that secures the print head carriage (open front lid to access).

Now connect the computer cable(s) to the appropriate interface. Next, connect the power cord supplied with the printer to the printer and an appropriate power outlet. The pictures below show the location of the interface connectors on the rear panel of the printer.



Standard Interface Connectors on rear of printer



Ethernet Interface Connectors on rear of printer

Interface Set Up

Depending upon which interface is being used to connect the printer to the host computer, some set up may or may not be required. This is true of the standard parallel, serial, or Ethernet.

The factory default settings for each interface should work well for most installations. However, the following paragraphs provide some basic information about each interface and also refer to the page number in the "Printer Configuration" chapter where all the details for each interface are described. If you need to make changes to the default settings, please refer to "**Introduction To Setup**" on page 34 for instructions on how to access the printer's Setup menus.

Once you are comfortable that the interface settings match those required by your computer, proceed to the next section, "**Installing a New Ribbon Cartridge**" on page 10.

RS-232C Serial Interface

This interface uses a 25 pin "D" connector. The default settings are 9600 baud, 8 data bits, 1 stop bit, and no parity with hardware handshake on pin 11. The default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 45.

Parallel Interface

This interface uses the standard 36 pin parallel connector. The default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 49.

Ethernet 10/100BaseT

This interface uses a standard RJ-45 connector and the default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 49. For additional software installation and operational information, please refer to the *Troy XCD Quick Install Manual* shipped with the unit.

Installing The Ribbon Cartridge

The Printek printer has been designed to make installing Printek brand ribbons a simple, clean process. Unlike other printers, there is no need to touch the ribbon fabric or deal with difficult to position ribbon guides. The following sections explain why the use of Printek brand ribbons should be important to you and will guide you through installing the ribbon cartridge.

Why Use Only Printek® Brand Ribbons

Printek® Brand Ribbon Label

The above label on each ribbon can identify Printek brand ribbons. There are many reasons to use only Printek brand ribbons in your PrintMaster 850 Series printer. First of all, ***using only Printek brand ribbons will automatically extend the printhead warranty to two years*** instead of one year.

The reason this is possible is that Printek brand ribbons are manufactured to much higher quality standards than those offered by other manufacturers. This provides not only longer print head life, but also longer ribbon life… ***15 million characters*** as compared to only 5 million characters from some generic ribbons.

Remember that using *only* Printek brand ribbons is important because the wear that is started and the contamination that remains from even one inferior ribbon will continue to damage the print head. Also, damage to other printer components, which is caused by the use of non-Printek ribbons, will not be covered by the printer's warranty.

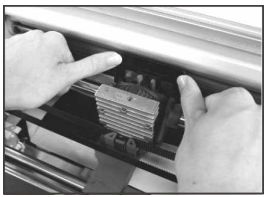
Using inferior ribbons would be like using poor quality fuel in your automobile. Premature engine failure and poor performance leading up to the failure would be the best you could expect.

Installing a New Ribbon Cartridge

Open the ribbon lid at the front of the printer. The printer automatically positions the print head for ribbon loading by moving it away from the platen surface and centering it laterally within the compartment.

If necessary, remove the old ribbon cartridge by grasping the cassette with both hands and pulling straight up and out of it's detented seat.

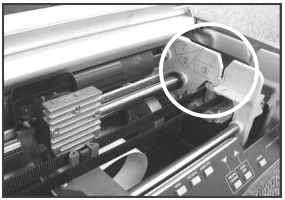
Lift the ribbon cover. Unload form.



Push noseshield to forward detent.

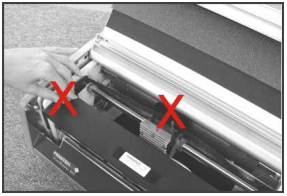
Take up slack in the ribbon by turning the blue knob counter clockwise.

Hold the ribbon cassette with both hands with the ribbon end pointing down slightly, and insert it into the printer so the ribbon lays flat across the top portion of the noseshield.



Align ribbon with position ① on sideplate. Rotate ribbon to ②, to slide ribbon into Printhead/Shield gap. Pull ribbon toward you to ③.

Push down to snap the ribbon into place.



Note: DO NOT take up the ribbon slack or reposition noseshield after seating cassette. The printer will do his automatically when the ribbon cover is closed.

Close lid and put printer ONLINE to automatically tension the ribbon.

Loading Paper

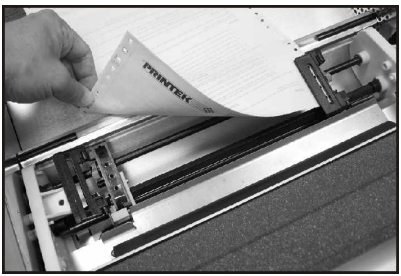
When shipped from the factory, the basic configuration for all ten forms is an eleven-inch form, six lines per inch, and ten characters per inch. If the forms you are loading do not match these requirements, please refer to the printer Configuration" chapter on page 34 and review the "**Introduction To Setup**" and "**Forms Menu**" sections.

Please refer to the appropriate section below for loading paper in the PrintMaster 850/850si, or PrintMaster 852si.

PrintMaster 850/850si Single Tractor Model

Loading the Form in the Tractors

1. Open the paper door (rear lid) of the printer. This will provide access to the tractors as shown below.



PrintMaster 850 tractors

2. Open the tractor doors and remove the old form.
3. If the new form is a different width than the previous form, unlock the right tractor and move it to approximately the new position.

Note: The left tractor position is fixed and may not be moved.

4. The form should be face down as shown in the picture. Place the left edge of the new form in the left tractor with the holes aligned with tractor pins. Make sure that the top edge of the form does not extend above the top of the tractors.
5. Close the left tractor door.
6. Now position the paper in the right tractor in the same fashion. If necessary, the position of the right tractor may be adjusted. To do so, move the lever on the side of the tractor back to unlock the tractor and slide the tractor sideways on the shafts.
7. After the paper is placed in the tractor and the door is closed, position the tractor far enough to the right so that there is no buckle in the paper between the tractors, but not so tight that the holes in the paper are distorted. Lock the tractor in place by returning the lever to the forward position.

Informing the Printer That the New Form is Loaded

1. Press the LOAD/FEED button. The display will now show that the new form has been "loaded".
2. Close the paper door.
3. Make sure the correct form to be positioned for printing is selected and press either the LOAD/FEED button or the ONLINE button. The LOAD/FEED button will position the form for printing but will not place the printer on line. The ONLINE button will both position the form and place the printer on line.

PrintMaster 852si Dual Tractor Model

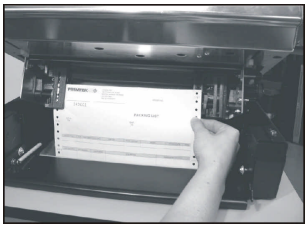
Loading the Form in the Bottom Feed Tractors

1. Open the bottom feed paper door by pulling the top of the door towards you, as shown below.

2. Lift the front of the printer up to access the tractors, as shown below. The printer will remain in this raised position. Open the tractor doors and remove the old form.

3. Feed the paper up through the bottom of the printer with the printed side facing you and position the holes in the edge of the paper over the pins in the **left tractor** while making sure that the paper will not extend above the top of the tractors. Then close the tractor door.

Note: The left tractor position is not adjustable. If it is necessary to adjust where printing begins, refer to the "**Aligning Print**" in the "DAILY OPERATION" section of this manual.



5. Now position the paper in the **right tractor** in the same fashion. If necessary, the position of the right tractor may be adjusted. To do so, move the lever on the side of the tractor down to unlock the tractor and slide the tractor sideways on the shafts

   After the paper is placed in the tractor and the tractor door is closed, position the tractor far enough to the right so that there is no buckle in the paper between the two tractors, but not so tight that the holes in the paper are distorted. Lock the tractor in place by returning the lever to the up position.

6. Close the bottom paper door and lower the front of the printer down until it latches in place.

Selecting Which Form to Print

With the printer off line, press the UNLOAD/CHANGE button until the desired form is displayed. To use the bottom path, the word "Bottom" must appear below the form name. If the desired paper path is not shown, refer to the "**Tractor Path**" topic in the "**Forms Menu**" section of the "PRINTER CONFIGURATION" chapter. When the desired form and path are displayed, press the LOAD/FEED button. The LOAD/FEED

button will position the form for printing but will not place the printer on line. The ONLINE button will both position the form and place the printer on line.

Printer Self-Test

The printer performs many self-diagnostics each time power is applied. If you wish to perform an actual printing test, use the following steps.

1. Make sure the printer is powered on with ribbon and paper loaded. The test pattern to be printed will use the current form settings and in the PrintMaster 852si, the current paper path. Select the desired form settings and paper path before proceeding to the next step.
2. Open the front lid and press the MENU button until the display reads TEST MENU on the front panel.
3. Press the ALIGN/ITEM button until Test Mode is displayed on the top line.
4. Press the UP/DOWN ARROW buttons until Barber Pole is displayed on the bottom line.
5. Close the front lid and press the ONLINE button.
6. The printer will now exit Setup and begin printing a rotating character pattern using the current form settings. To stop or restart printing the test pattern, press the ONLINE button.
7. To take the printer out of the test mode, stop the test by pressing the ONLINE button.
8. Open the front lid and press the MENU button until the display reads TEST MENU.
9. Press the ALIGN/ITEM button until Test Mode is displayed on the top line.
10. Press the UP/DOWN ARROW buttons until Off is displayed on the bottom line.

11. Close the front lid and press the ONLINE button.

DAILY OPERATION

Introduction

This chapter describes how to use the "everyday" features of the PrintMaster 850 Series printer. The items covered are:

Control Panel Features – describes the most commonly used features of the printer's control panel.

Selecting and Loading Forms – describes how to insert paper or forms into the tractors and how to inform the printer of which forms are "loaded".

Ejecting and Tearing Off a Form – describes how to remove printed documents from the printer.

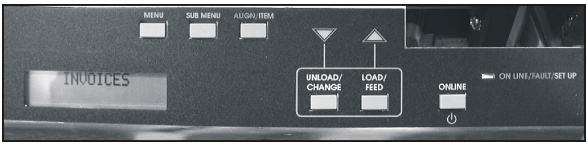
Installing a New Ribbon Cartridge – describes first time installation of the ribbon cartridge.

Aligning Print – describes how to precisely align where data is printed on a form.

Common Error Conditions – describes errors that may occur during normal printing operations.

Control Panel Features

The following picture shows the printer's control panel. The control panel consists of a two-line LCD display, a Status indicator LED, 6 push button switches or "buttons", and an Audible Alarm. Each of these items is described below



Control Panel

LCD Display and Online Status Indicator LED

LCD Display

This two line by sixteen-character display is used to convey several types of information. When the printer is on line and printing, or ready to print, the display will show the currently selected form, and in the case of the PM852si, it will also show the selected path. When the printer is off line, the display will continue to show this information, additional information depends upon other buttons being pressed by the operator, or error conditions such as `Check Paper`.

ONLINE Status

This is a multicolored LED which is used to display the following information:

Indicator LED

Green: The printer is on line and ready to print.

Flashing Green: The printer is in the process of going back on line. Typically occurs after a new form has been loaded while the printer is confirming which forms are loaded in the tractors.

Flashing Red: The printer is currently off line and cannot print. This may be due to the operator taking the printer off line or the printer may have detected an error condition, such as running out of paper, which requires operator intervention. If due to an error condition, the cause of the error will periodically be shown on the LCD display. After the cause of an error condition has been resolved, press the ONLINE button to clear the error. This will also place the printer back on line and allow printing to resume.

Yellow: The printer is in the process of exiting the Setup mode and saving Setup values, or the printer is currently busy performing an operation with the optional Setup Module.

Flashing Yellow: The user has pressed the MENU button and entered the Setup mode (may be exited by pressing the ONLINE button after the desired changes have been made). For more information, see the chapter on "PRINTER CONFIGURATION".

Audible Alarm: This device produces various tones to alert the operator when different error conditions occur. It may also be used to produce a tone when a bell character (ASCII BEL) is received from a host computer.

Exposed Buttons – Most commonly used functions

Power ON/ONLINE This button acts as the power switch for the printer. When the printer is OFF, pushing this button will turn the printer ON. If the printer is ON, the button implements the functions described below. When held for 5 seconds, this button will turn the printer OFF.

This button also toggles the printer between the on line and off line state. When the printer is on line, it may be printing or may begin printing at any time. To stop the printing or prevent printing from starting, use this button to take the printer off line (see "ONLINE Status Indicator") above. The printer must be off line in order to use the other control panel buttons.

This button is also used to place the printer back on line following any error condition (ONLINE indicator is flashing Red), such as paper out. When pressed to go on line, the printer will first attempt to clear any errors. For example, if there is a paper out condition, the printer will attempt to load the form in the currently selected tractors and, if successful, go on line.

LOAD/FEED

This button performs a number of different form feeding functions. The printer will automatically select the correct function to perform based upon the current position of the form.

LOAD:

- Loads the form that is presently selected.

  If the selected form is already recognized as "loaded" in the tractors, the printer will advance the form to the print position.

  If the selected form is not currently considered to be loaded in the tractors (display shows <Not Loaded>), this button will change the status of this form to "loaded".

FORM FEED:

- If a form is currently loaded and perhaps partially printed, this button will advance the bottom of the current form to the tear bar so that it may be torn off.
- If a form has already been advanced to the tear bar, this button will advance the next form to the tear bar.

UNLOAD/CHANGE

This button is used to access up to ten different forms, which have been previously configured with the Setup menus (see the chapter on "PRINTER CONFIGURATION" for more information).

When this button is pressed, one of two functions will be performed.

UNLOAD:

- If a form is currently in position to be printed, this button will pull the form down until the top of the form is in the tractors.

CHANGE:

- If the form has already been pulled down to the tractors as described above, this button will cycle through all the available form choices. Forms which are not considered to be "loaded" in the tractors will flash `<Not Loaded>` on the bottom line of the display. For more information, see the following section on **"Selecting and Loading Forms".**

"HIDDEN" (UNDER LID) Buttons – SETUP AND CONFIGURATION

MENU — This button is used to set up the various operating parameters of the printer for forms, interfaces, etc. This button is not used on a daily basis. For more information see the chapter on "**PRINTER CONFIGURATION**".

SUB MENU — This button is used in conjunction with the MENU button to navigate the menus for setting up operating parameters, forms definitions, interface information, etc. For more information, see the chapter on "**PRINTER CONFIGURATION**".

ALIGN/ITEM — This button will access the horizontal and vertical print adjustment settings for the selected form,

when not in set up mode.

When ALIGN/ITEM is pressed, the ALIGN PRINT MENU is displayed. Press ALIGN/ITEM again to enter the horizontal adjustment. Pressing the UP/DOWN ARROW buttons will move the print position on the line left or right by 0.01 inches for each press of a button as indicated on the display. The arrows to the side of the number will indicate the direction the print will be moved.

To access the vertical adjustment, press the ALIGN/ITEM button. Pressing the UP/DOWN ARROW buttons will now move the print up or down on the page by 0.01 inches for each press of a button as indicated on the display. The arrow to the right of the number will indicate the direction the print will be moved.

To exit ALIGN mode, press the ONLINE button.

For a more detailed description, see "**Aligning Print**" later in this chapter.

Selecting and Loading Forms

Note: A form is not considered "loaded" by merely placing the form in the tractors. To prevent printing on the wrong form, the printer must be made aware of what form(s) are currently loaded. When a new form is placed in the tractors, the form must be "loaded" using the control panel as described in the next section, "**Loading a New or Different Form in the Tractors**".

Selecting a Form Already Loaded in the Tractors

To select a form that is already physically in the tractors, take the printer off line and press the UNLOAD/CHANGE button until that form is displayed (a form that is not considered to be loaded will flash <Not Loaded> on the bottom line of the display). The form selection will be displayed as FORM 0 through FORM 9 or as the actual name of the form if that has been set up.

To position the form for printing, you may press the LOAD/FEED button, which will position the form, or you may press the ONLINE button, which will both position the form and place the printer on line.

Loading a New or Different Form In the Tractors

This section describes how to "load" a form in the tractors. This involves physically placing the paper or form in the tractor mechanism and then informing the printer that the new form is present.

Select the Form to be Loaded

1. Take the printer off line by pressing the ONLINE button. The ONLINE indicator should now be flashing red.
2. Press the UNLOAD/CHANGE button. This will move the current form from the print position to the tractors for removal.
3. Continue to press the UNLOAD/CHANGE button until the desired form name is shown on the top line of the display. The form name will be FORM 0 through FORM 9 or the actual name of the form if the name has been set in SETUP. If the desired form is not considered to be "loaded" by the printer, <Not Loaded> will flash on the bottom line of the display.

Loading the Form in the Tractors

(Refer to "**PrintMaster 850/850si Single Tractor Model**" page 12)

Ejecting and Tearing Off a Form

When most print jobs are complete, the printer will command the paper to be positioned at the top of the next form so that the printer is ready for the next job. This is, however, dependent solely upon how the programmer chose to write your particular application software. If your software does position the paper at the top of the next form, the printer will automatically position the form at the tear bar as shown in the following picture.

Bottom of form at tear bar

If your form is positioned as shown, you may skip the next section on positioning and proceed with **"Tearing off a Form"**.

Positioning the Form for Tear Off

1. If your print job has completed and the form is not positioned as shown above, take the printer off line by pressing the ONLINE button (indicator will change from green to flashing red).

2. Press the LOAD/FEED button. This will automatically position the form at the tear bar and you may tear off the form as described below.

Tearing off a Form

1. Make sure the printer is off line (indicator flashes red when off line) by pressing the ONLINE button if necessary. This will prevent the printer from pulling the paper down to start printing the next job while you are tearing off this one.
2. Pull the paper toward the front of the printer and toward one side of the printer as shown.

Tearing off a form

3. Place the printer back on line with the ONLINE button (indicator changes to green). The form will automatically be pulled down into position for printing the next time the printer receives data to be printed.

Aligning Print

When a new form is loaded into the printer for the *first time*, it may be necessary to adjust where printing begins. If the print position needs to be adjusted, the following discussion will describe how this is accomplished. Note that the alignment for the selected form is permanently stored in the printer's memory and does not have to be readjusted each time the form is loaded.

To align print on a particular form, open the front lid and select that form with the UNLOAD/CHANGE button and then press the ALIGN/ITEM button. If the form selected were named "Invoices", the display would now show the following.

```
Aligning Print
  On INVOICES
```

After a short time, the display would change to:

```
ALIGN/ITEM MENU
  On INVOICES
```

Press ALIGN/ITEM. Be sure to remember that you are *moving where the print is placed on the page*.

```
Left/Right
 ¬0.00"®
```

The UP/DOWN ARROW buttons will move the print left or right in 1/100th inch increments. Note that the left and right arrows will change according to which way the print has been moved from the normal print position. The maximum distance print may be moved is 9.99 inches in either direction.

To move the print vertically on the page, press the ALIGN/ITEM button and the display will change to the following.

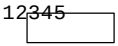
```
Down/Up     ^
0.00"       v
```

The UP/DOWN ARROW buttons will move the print up or down in 1/100th inch increments. Note again that the arrow will change according to the direction the print is to be moved from the normal print position. The maximum distance print may be moved is 9.99 inches in either direction.

To exit ALIGN mode press the ONLINE button.

Example

In this example, a number needs to be printed in a box on a preprinted form. This form could be a packing list, an invoice, a check, etc. The first time the page is printed, the number misses the box as shown below.



In this case, the *print* needs to be moved to the right and down. To accomplish this, press ALIGN/ITEM and access the `Left/Right` option. First move the print to the right using the UP ARROW button. It appears that the text needs to move about three characters. If the text is being printed at 10 cpi (characters per inch), this would be 0.30 inches. After making this adjustment the display would look as follows.

```
Left/Right
¾0.30"®
```

If you were to print this form now, it would appear as follows, showing that the print still needs to be moved down.

To move the print down, access the `Down/Up` option by pressing the ALIGN/ITEM button. It appears that the print needs to be moved down nearly the height of the characters. These characters are approximately

0.10 inches tall, so move the print down about 0.08 inches. The display should look as follows.

```
Down/Up
0.08"
```

Now when the form is printed again, the text will be printed in the box as shown here.

12345

Common Error Conditions

Whenever the printer detects an error condition, it will automatically go off line. User correctable errors are "flashed" on the display. These errors can typically be recovered without loss of data and are listed in this section of the manual.

Other errors, which typically result in loss of data, are considered fatal errors. These errors display the word ERROR on the top line of the display and do not flash. These errors are listed in the "MAINTENANCE AND TROUBLESHOOTING" section of this manual.

Check Paper

This error is caused either by running out of paper or by a paper jam. The printer will attempt to determine the cause of a paper problem and accompany the "Check Paper" message with "Paper Jam", or "Paper Out/Jam".

It is not necessary to press the UNLOAD/CHANGE button.

If the error is caused by a paper jam, remove the jammed form. If the form remaining in the tractors has tears along the top edge, remove it from the tractors, tear it off, and place the next form in the tractors.

If the error is caused by running out of paper, simply load a form as previously described.

Finally, place the printer back on line by pressing the ONLINE button. This will automatically load the new form and begin printing. Depending upon how the printer has been set up, the printer may start printing where it left off or it may start at the beginning of the page where the error occurred and reprint the entire page. See "**Paper Out Fault Action**" on page 54 for more information.

No Paper to Load

This error occurs when the LOAD/FEED button has been pressed and there is no paper or form in the tractors. Place paper in the tractors and press LOAD/FEED again.

Too Much Paper to Unload

This error occurs when the UNLOAD/CHANGE button has been pressed and there is paper present too far beyond the tear bar. This error serves as a warning that you may be putting forms that have already been printed on back into the printer. Tear off any printed forms past the tear bar and press UNLOAD/CHANGE again. This error also occurs if the LOAD/FEED button has been pressed and the current form cannot be unloaded.

Selected Form is not Loaded

This error occurs when ONLINE has been pressed and the currently selected form is displaying `<Not Loaded>`. Either press LOAD/FEED to load the selected form or select a different form, then press LOAD/FEED and then press ONLINE.

Ribbon Lid Open

This error occurs when ONLINE has been pressed and the ribbon lid has been left open. Close the lid and press ONLINE again.

Other Errors

If other errors occur, it is possible that they may not be resolved without the aid of a factory trained service technician. Please refer to the "MAINTENANCE AND TROUBLESHOOTING" section on page 63.

PRINTER CONFIGURATION

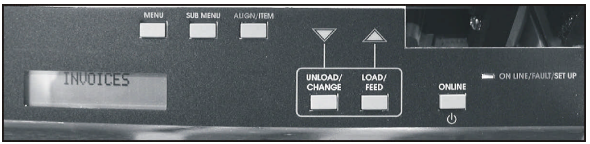
Introduction To Setup

The PrintMaster 850 Series printers feature simple, easy to use menus for setting the various operating parameters for the printer. The parameters available in these menus usually only need to be set one time, either when the printer is first installed or perhaps when a new form is to be used. These values are stored in nonvolatile memory, which means that they will remain set even if the printer is turned off. Please note that, in an effort to minimize the total number of buttons and provide an uncluttered control panel, most buttons on the PrintMaster 850 Series printers are "context-sensitive", i.e., their specific function is dependent on the present state of the printer or the menu level you happen to be in. For example, the Unload/Change button is used to unload forms or change the loaded form in the printer, depending on whether a form is loaded already. When in the Menu system with the Front Lid open, this same physical button serves as a "Down Arrow" button, allowing you to modify the settings of various printer parameters. The following sections give detailed descriptions of the buttons and the different functions they perform depending on the context. Following this introduction are complete, detailed descriptions of each menu item.

Setup Buttons

For your convenience, the MENU button and the other buttons used while in the Setup mode are labeled in yellow on the control panel. Once in Setup, these buttons are the MENU, SUBMENU, ALIGN/ITEM, and UP/DOWN ARROW buttons. The ONLINE indicator will flash yellow whenever the

printer is in the Setup mode as a reminder to use the yellow labels. The buttons used for Setup are shown on the next page.



Control Panel Setup Buttons

Note that the menu system works on a "what you see is what you get" basis. This means that whatever value is last displayed for an item is the value that will be saved when Setup mode is exited.

Entering Setup

To enter Setup, open the front lid, and press the MENU button. The ONLINE indicator will begin to flash yellow and the display will temporarily show the following.

```
Entering
Setup Menus
```

After the above message has been shown, the display will change to the first menu available, which is the **FORMS MENU** as shown below. In this case the display will also show the first submenu, which will be the form that was selected when Setup was pressed.

```
FORMS MENU
Form 0
```

Using the **MENU** Button

At this time you may select a different menu by pressing the MENU button. Other menus available are the **INTERFACE MENU**, the **OPTIONS**

MENU, and the TEST MENU. Continue to press the MENU button to select the desired menu. The MENU button may be pressed at any time to select a different menu.

Using the **SUBMENU** Button

The SUBMENU button selects additional menus that are related to the selected menu. For instance, if the FORMS MENU has been selected, the SUBMENU button will select which form (Form 0 through Form 9) is to be set up. Note that not all menus have submenus. If no submenu is available, the bottom line will be blank and the SUBMENU button will not be used.

Using the **ALIGN/ITEM** and **UP/DOWN ARROW** Buttons

Once the correct menu and submenu (if available) is selected, pressing the ALIGN/ITEM button will cause the various items and their current values to be displayed. Note that the items and their values are right justified. To scroll through the items available, repeatedly press the ALIGN/ITEM button. To change the value of the displayed item, use the UP/DOWN ARROW buttons to step through the possible choices. Remember to leave the correct value displayed before selecting a different item or menu, since "what you see is what you get" when Setup Mode is exited.

Exiting Setup

To exit Setup Mode and automatically go on line, just close the lid . The display will now show one of the messages below and automatically go on line.

```
Exiting Menus
Saving Changes
```

```
Exiting Menus
  No Changes
```

Forms Menu

Most form printing applications use several different forms such as packing lists, bills of lading, invoices, checks, and green bar paper for reports. Not all of these forms require the same printer settings for things such as font, character size, line spacing, or form length. The PrintMaster 850 Series printers store up to ten complete sets of form parameters including the name of the form. These ten sets of parameters, or "forms", are permanently stored in the printer's memory and are referred to as "`Form 0`" through "`Form 9`". These forms can be accessed from a single button on the printer's control panel or by a command sent from the host computer.

To access the `FORMS MENU`, enter Setup by pressing the MENU button. After the '`Entering Setup Menus`" message has been displayed, the following will appear.

```
FORMS MENU
Form 0
```

Note that the actual form number will be for the form that was active prior to entering Setup. To select a different form, press the SUBMENU button until the desired form is displayed. Next press the ALIGN/ITEM button to begin displaying the various items for that form. The items available for each form are described on the following pages. The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

Forms Menu Items

Form Name `Form Name`

```
FORM 0
```

Possible Values: Up to 16 characters of A through Z, Space, 0 through 9

When shipped from the factory, the Form Names will be set to "FORM 0" through "FORM 9". This name may be changed to any combination of capital letters (A-Z), numerals (0-9), or spaces. The name may be up to 16 characters in length.

Entering a name uses the SUBMENU and UP/DOWN ARROW buttons. The SUBMENU button will advance the cursor, a flashing block, which is used to indicate the character that is to be changed. The UP/DOWN ARROW buttons will change the character where the cursor is currently flashing.

The order of characters that may be selected is "ABCDEFGHIJK LMNOPQRSTUVWXYZ, Space, 0123456789". Even though the name will be right justified while being entered, it will be automatically centered on the display when not in Setup Mode, so there is no need to try to center it with spaces.

Tractor Path
852si only

```
Tractor Path
       Rear
```

Possible Values: Rear, Bottom, Bottom +Rear

This item is only available in the PrintMaster 852si and is used to set the tractor path to be used for the currently selected form. Typically, most forms are only loaded in one tractor path and the value will be set to Rear or Bottom. However, a form can also be set to use both paths (Bottom+Rear). This may be desirable when printing long print jobs where a paper out condition needs to be avoided. This is often true if the job is to be run overnight or at a remote and perhaps unattended location. When a form's tractor path is set to Bottom +Rear, the printer will automatically switch to the rear path when the bottom path is empty and continue printing until both paths are empty. In this mode, printing must begin on the bottom path.

Lines Per Inch

```
Lines/Inch
6
```

Possible Values: `6*, 8`

This item sets the line pitch to 6 or 8 lines per inch (LPI).

Form Length

```
Form Length
66 Lines
```

Possible Values: `1 … 66* … 227 Lines`

This item sets the form length in lines at the current line pitch (LPI). For example: for an eleven-inch form, enter 66 if you are using six lines per inch or 88 if you are using eight lines per inch.

Top Margin

```
Top Margin
0 Lines
```

Possible Values: `0* … 226 Lines`

This item sets the top margin in lines. Setting a top margin will reduce the size of the printable area of the page by the number of lines set. Printing will not be allowed above the top margin.

Note: In most cases changing where printing begins on a form should be accomplished with ALIGN/ITEM rather than with a top margin. Adding a top margin may cause some programs to print the first form correctly and then print following forms too far down the page if the program sending the data does not require the margin.

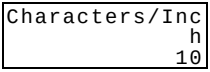
Bottom Margin

```
Bottom Margin
0 Lines
```

Possible Values: `0* … 226 Lines`

This item sets the bottom margin in lines. Setting a bottom margin will reduce the size of the printable area of the page by the number of lines set. When the bottom margin is reached, the remainder of the page will be skipped and printing will resume at the beginning of the next page (or top margin if one is set). Adding a bottom margin may cause some data to be printed on the wrong page if the program sending the data does not require the margin.

Characters Per Inch



Possible Values: `10*, 12, 13.3, 15, 16.74, 17.14, 20`

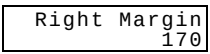
This item sets the default character pitch in Characters Per Inch (CPI). (Note that OCR-A and OCR-B characters are only valid at 10 CPI and will always print at 10 CPI regardless of this setting.)

Left Margin

Possible Values: `Column 0* … 166`

This item sets the left margin in columns (characters) relative to the left edge of the paper. The column width is based upon the current character pitch (CPI). The left margin must be less than the right margin. The left margin may be used to cause printing to begin farther to the right on a form. In many cases using ALIGN/ITEM may be preferable to using a left margin (see "**Aligning Print**" on page 29).

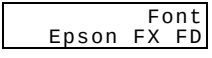
Right Margin



Possible Values: `Column 4 … 170*`

This item sets the right margin in columns (characters) relative to the left edge of the paper. The right margin must be greater than the left margin. Text characters that would have printed to the right of the margin will be "wrapped around" and printed at the beginning of the next line. Any text, which would print before the right margin but beyond the usable right edge of the platen, will be wrapped around also. Text characters that would have printed to the right of the margin or beyond the usable right edge of the platen will be truncated when the `Truncate Lines` Option is set to `Yes`. Refer to the Options Menu topic in this section for details. Graphic data that would have printed to the right of the margin will be truncated (not wrapped around).

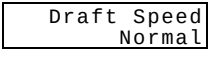
Font



Possible Values: `Epson FX FD*, DF, LQ; PC English FD, DF, LQ; PC Latin 2 FD, DF, LQ; DEC LA120 FD, DF, LQ; EBCDIC FD, DF, LQ; OCR-A OQ; OCR-B OQ Roman-8 FD, DF, LQ ML Euro (858) FD, DF, LQ ML (850) FD, DF, LQ`

This item selects the default font to be used.

Draft Speed

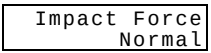


Possible Values: `Normal*, Fast`

This item selects whether the Draft Font (`DF`) or the Fast Draft (`FD`) font will be selected when the printer receives a "select draft font" command from

the host computer. This will allow the Fast Draft font to be used with programs, which would not be able to otherwise.

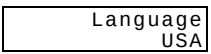
Impact Force



Possible Values: `Normal*, High`

This item may be used to select High Impact for improved printing on multipart forms that do not otherwise print well on the back copies.

Language



Possible Values: USA*, France, Germany, England, Denmark, Sweden, Italy, Spain, Japan, Finland

This item selects the character substitution table to be used for an alternate language when printing. The Epson font must be selected in order for this feature to work properly. The character substitutions are shown in the following table.

Char Value	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	$	@	[	\	]	^	`	{	¦	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
England	£	$	@	[	\	]	^	`	{	¦	}	~
Denmark	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain	PTS	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	¦	}	~

Zero Style

```
Zero
Normal
```

Possible Values: `Normal*, Slashed`

This item selects whether the numeral zero is printed with or without a slash through it. (This is true for normal text characters.)

Unidirectional Printing

```
Unidirectional
No
```

Possible Values: `No*, Yes`

This item selects unidirectional printing instead of bi-directional printing. Fast Draft and Draft print speed is reduced when unidirectional printing is selected.

This may be used to improve the straightness of vertical lines for critical applications such as printing form boxes using PC Font line characters.

Interface Menu

The Interface Menu may contain several submenus. These submenus are for setting up items pertaining to the hardware interfaces such as the serial and parallel ports.

In addition to the standard parallel interface and the RS-232C serial interface, which are furnished with the printer, 10/100BaseT Ethernet may also be installed. The Setup items for each interface are described in one of the following sections.

RS-232C Serial Interface on page 45
Parallel/LAN Interface on page 49

Entering the Interface Menu

To Enter the Interface Menu, enter Setup and press the MENU button until INTERFACE MENU is displayed on the top line as shown below.

The SUBMENU options for the INTERFACE MENU always include the Serial and Parallel/LAN ports. To select the desired interface, press the SUBMENU button until that interface is displayed on the bottom line. Note that when the Lan Setup option under the Parallel/LAN item list is set to On, the serial Interface is not available and will not appear in the Interface Menu. Next press the ALIGN/ITEM button to begin displaying the items associated with that interface. Each interface and the items, which pertain to that interface, are listed on the following pages. Note that many items are the same for more than one interface since the computer attached to that interface may have different requirements for each of those items.

The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

RS-232C Serial Interface Items

```
INTERFACE MENU
       Serial
```

Emulation

```
    Emulation
        Epson
```

Possible Values: `Epson*, IBM Proprinter, DEC LA120/LA210, TTY, Printek, ANSI X3.64, Genicom 3840, Genicom 3410`

This item selects the emulation to be used whenever the serial port is active. `Emulation` should be set to match the type of printer your software supports.

Automatic Carriage Return

```
    Auto CR
        On
```

Possible Values: `Off, On*`

This item enables or disables automatic Carriage Returns (CR) whenever a Line Feed (LF), Vertical Tab (VT), or Form Feed (FF) is received.

Automatic Line Feed

```
    Auto LF
       Off
```

Possible Values: `Off*, On`

This item enables or disables automatic Line Feeds (LF) when a Carriage Return (CR) is received.

Perform Host Form Feed at Top-of-Form

```
Host FF at TOF
           No
```

Possible Values: `No*, Yes`

This item selects whether Form Feeds (FF) will be performed when received from the host computer if the paper is already positioned at the top of form (TOF). Setting this item to `No` will help prevent blank pages.

Characters

```
   Characters
      Control
```

Possible Values: `Control*, Printable`

This item selects whether certain control character symbols will be printed or be treated as control characters. The effect of this is dependent upon the `Emulation` selected.

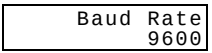
Minimum Buffer

```
Minimum Buffer
           No
```

Possible Values: `No*, Yes`

This item selects whether the smallest possible I/O buffer should be used. Setting this item to `No` will allow the printer to make maximum use of the I/O buffer (see "**Paper Out Fault**" on page 54 for more information on buffer size). Setting this to `Yes` may decrease performance, but is useful when using the printer with operating systems that try to keep track of which page is currently being printed by the printer. This may also be useful when using serial I/O with systems that do not respond quickly enough to handshake signals.

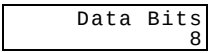
Baud Rate



Possible Values: `110, 150, 300, 600, 1200, 2400, 4800, 9600*`

This item selects the baud rate for the serial interface. This must be set to match the baud rate setting on the host computer.

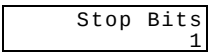
Data Bits



Possible Values: `8*, 7`

This item selects the number of data bits in the serial character frame. This must be set to match the character size setting on the host computer.

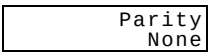
Stop Bits



Possible Values: 1*, 2

This item sets the number of stop bits to be used at the end of the serial character frame. This must be set to match the stop bit setting on the host computer.

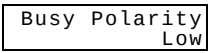
Parity



Possible Values: `None*, Even, Odd`

This item selects the parity checking requirements for the serial data bits. This must be set to match the parity setting on the host computer.

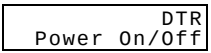
Busy Signal Polarity



Possible Values: `Lo*, Hi`

This item selects the polarity of the busy signal (pin 11 of the RS-232C interface). Busy is set whenever the printer is offline, the serial input buffer is full, or another interface port is currently active.

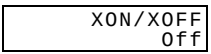
Data Terminal Ready



Possible Values: `Power On/Off*`
`Online/Offline`
`Busy/Not Busy`

Selects the condition to be reflected by the DTR signal (pin 20 of the RS-232C interface). In most cases, especially those involving a MODEM, this signal should be set to indicate `Power On/Off`. Selecting `Online/Offline` will reflect only the condition indicated and does not reflect a buffer full condition. `Busy/Not Busy` will cause DTR to indicate both the online/offline status and buffer full condition (see "Busy Polarity" above).

XON/XOFF Handshaking



Possible Values: `Off*, On`

Enables or disables the transmission of the XON and XOFF characters from the printer to the host to control data flow to the printer. XOFF will be sent whenever the printer goes offline or the serial buffer is full. XON will be sent when the printer is again ready to receive characters.

ETX/ACK Handshaking

```
ETX/ACK
Off
```

Possible Values: `Off*, On`

Enables or disables the ACK response to receipt of the ETX character. This handshake method is useful for conditions where there are long transmission line delays such as telephone lines, which may be routed through satellites. An ACK character will be returned to the host computer after an ETX character is received and processed. ETX characters used for handshaking cannot be part of an escape sequence.

RTS/CTS Handshaking

```
RTS/CTS
OFF
```

Possible Values: `Power On/Off*`

If your Host system requires or supports hardware handshaking for data flow control, it may be useful to change this parameter to ON. This may apply especially to older Host systems using Full-duplex communications.

Parallel/LAN Interface Items

Since the optional LAN interface goes into the Parallel port, these interface parameters are the same.

```
INTERFACE MENU
Parallel/LAN
```

Emulation

```
Emulation
Epson
```

Possible Values: `Epson*, IBM Proprinter, DEC LA120/LA210, TTY, Printek, ANSI X3.64, Genicom 3840, Genicom 3410`

This item selects the emulation to be used whenever the parallel port is active. The emulation should be set to match the type of printer your software supports.

LAN Setup

```
LAN Setup
Off
```

Possible Values: `On, Off*`

This item enables or disables the ability to control the optional Ethernet interface card from the front panel. When set to `On`, the Serial Interface is not available, and menu items for the Ethernet card follow. Consult your Network Administrator before changing any of these items.

Note: Setting this item to `On` when the optional Ethernet interface card is not present may result in the printer appearing to "hang" when exiting the Setup Menus. After 15 seconds, a `LAN Timeout` error will be displayed. Press ONLINE, then enter the Setup Menus and correct the problem.

IP Address Method

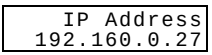
```
IP Address
Auto
```

Possible Values: `Auto*, Static`

This item controls how the optional Ethernet interface card receives its network address. When set to `Auto`, the Ethernet card will receive its network address from a network DHCP server (typical installation). When

set to Static, the user sets the TCP/IP address, Subnet Mask and TCP/IP Gateway address as follows:

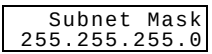
IP Address



Possible Values: 000.000.000.000 ... 255.255.255.255

To set the TCP/IP address, use the SUBMENU key to select which digit group you wish to change, and then use the UP/DOWN ARROW keys to change the value. The value will change rapidly if the key is held down.

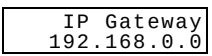
Subnet Mask



Possible Values: 000.000.000.000 ... 255.255.255.255

To set the Subnet Mask, use the SUBMENU key to select which digit group you wish to change, and then use the UP/DOWN ARROW keys to change the value. The value will change rapidly if the key is held down.

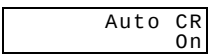
Gateway Address



Possible Values: 000.000.000.000 ... 255.255.255.255

To set the TCP/IP Gateway address, use the Submenu key to select which digit group you wish to change, and then use the UP/DOWN ARROW keys to change the value. The value will change rapidly if the key is held down.

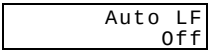
Automatic Carriage Return



Possible Values: `Off, On*`

This item enables or disables automatic Carriage Returns (CR) whenever a Line Feed (LF), Vertical Tab (VT), or Form Feed (FF) is received.

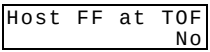
Automatic Line Feed



Possible Values: `Off*, On`

This item enables or disables automatic Line Feeds (LF) when a Carriage Return (CR) is received.

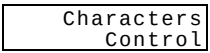
Perform Host Form Feed at Top-of-Form



Possible Values: `No*, Yes`

This item selects whether Form Feeds (FF) will be performed when received from the host computer if the paper is already positioned at the top of form (TOF). Setting this item to `No` will help prevent blank pages.

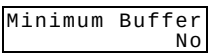
Characters



Possible Values: `Control*, Printable`

This item selects whether certain control character symbols will be printed or be treated as control characters. The effect of this is dependent upon the emulation selected above.

Minimum Buffer



Possible Values: `No*, Yes`

This item selects whether the minimum I/O buffer size should be used. Setting this item to `No` will allow the printer to make maximum use of the I/O buffer (see "**Paper Out Fault**" on page 54 for more information on buffer size). Setting this to `Yes` may decrease performance, but is useful when using the printer with operating systems that try to keep track of which page is currently being printed by the printer.

Options Menu

The `OPTIONS MENU` contains items, which do not pertain only to a specific form or specific interface, but rather affect how the printer works under all conditions. To access the options menu, enter Setup and then press MENU until `OPTIONS MENU` is displayed

```
OPTIONS MENU
```

Note that the options menu has no submenus. Therefore, press the ALIGN/ITEM button to begin displaying the items available. The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

Maximum Form Allowed

```
Max Form
Allowed
Form 1
```

Possible Values: `Form 0` … `Form 1*` … `Form 9`

This item sets the last form number to be displayed for operator selection with the UNLOAD/CHANGE button or while in the Forms Menu. This allows the operator to see only the forms that are in use rather than having to sort through several unused forms.

Note that when setting this value that you may not select a value less than the form currently selected when Setup was entered, or less than the form currently selected in the "`Setup: FORMS`" menu.

Automatic Scroll Delay

```
Auto-Scroll
1 Second Delay
```

Possible Values: `Off, 1* to 15 Second Delay`

This item sets the number of seconds to delay before scrolling the top of form to the tear bar when the printer is idle (no additional data received since the last print operation) and a form boundary (bottom of the form according to the Form Length setting for the current form) has been reached. If printing finishes and the form boundary has not been reached, take the printer off line and the LOAD/FEED button may be used to advance the form to the tear bar. This item may also be used to disable Auto-Scroll by setting the value to `Off`. When disabled, the LOAD/FEED button must always be used to advance the form to the tear bar.

Tear-Off Distance

```
Tear-Off
0.00 Inches
```

Possible Values: `0.00* … 9.99 Inches`

This item sets the additional distance the paper will advance when scrolling to the tear bar. This allows the printer to be placed under a slot in a counter and have the tear-off positioned at the counter surface. Leave the distance set to 0.00 Inches to disable this feature. To set the value, use the UP/DOWN ARROW buttons to change the value. Holding the buttons will cause the value to change rapidly. The paper will move accordingly to allow verification of the setting. Note that the setup Menus will not terminate when closing the lid while in this mode.

Paper Out Fault Action

```
Paper Out
    Fault
Finish Page
```

Possible Values:
```
Finish Page*
Reprint Page
Break Page
```

This item selects what action is to be taken when a paper out condition occurs. The action taken for each of the possible values is described in the following paragraphs.

When `Finish Page` is selected, the printer will attempt to print to the bottom of the page when a normal paper out condition occurs. Conditions that will prevent this from happening are when the end of paper is detected too far from the end of the form (the printer assumes there is not a complete page available), when reverse paper motion is attempted within the last one inch of the form, or when a paper jam occurs. If the printer is unable to finish printing the page, it will attempt to reprint the page as described below (also refer to the Reprint Page Size option which follows). Note that if highly precise printing is required in the last 4 inches of the form in the rear feed path, and the last 5¼ inches of the form in the bottom feed path, `Finish Page` may not provide accurate enough paper motion since the form is no longer controlled by the tractor mechanism.

When `Reprint Page` is selected, the printer will stop printing as soon as the end of paper or a paper jam condition is detected and the printer will go off line. After a new box of forms is loaded, the printer will attempt to reprint the current page from the beginning. If the printer is able to reprint the page, `Reprinting Page!` will be displayed when the new form is loaded (the previous partially printed page should probably be discarded). If the printer is unable to reprint the page, the page will be broken, `Cannot Reprint - Page Too Large` will be displayed, and printing will resume where it left off as described in the next paragraph. The printer's ability to complete the reprint successfully depends on whether the data for the current page is still in the printer's memory. Refer to the following Reprint Page Size option for more information regarding how much data may be retained.

When `Break Page` is selected, the printer will stop printing and go off line as soon as a paper out or paper jam condition is detected. After a new box of forms is loaded, printing will resume where it left off. The `Break Page` setting is appropriate when you know a page is too large to reprint (exceeds available buffer size, e.g. contains large graphic images). This will suppress the error message `Cannot Reprint` before printing continues.

Character to Ignore

```
Char. To
Ignore:
255
```

Possible Values: 0, ... 255*

This allows a single 8-bit character to be discarded as it is received. This is useful when the host application is sending an unwanted control character, for example. Values are in decimal, with printable characters displayed to the left of the decimal value.

To use this feature:

1) Press the UP/DOWN ARROW keys to select the desired character decimal value. Printable characters will appear to the left of the number.
2) Press the ITEM button to display `Ignore Character On/Off`, then the UP/DOWN ARROW keys to turn the feature `On` or `Off`.

This feature should not be turned on unless needed.

Top of Barcode

```
Top of Barcode
Off
```

Possible Values: On, Off*

In Genicom 3840 or 3410 Emulation, this feature repositions the print head at the top of a barcode after the barcode has printed. When disabled, printing continues from the bottom of the barcode.
This feature has no meaning in other emulations.

Top of Oversized

```
Top of
Oversized
Off
```

Possible Values: On, Off*

In Genicom 3840 or 3410 Emulation, this feature repositions the print head at the top of oversized characters after the oversized characters have printed. When disabled, printing continues from the bottom of the oversized characters.
This feature has no meaning in other emulations.

User Language

```
User Language
English
```

Possible Values: English*, French, German

This selects the front panel language that will be used by the printer's LCD screen. Press the UP/DOWN ARROW keys to change the selection. ***Note: If you change the selected language, you may find it difficult to return to this menu to correct it! Verstehen Sie?***

Reprint Page Size

```
Page Size
8192
Characters
```

Possible Values: 0, …, `8192*`, …, `28672`

This item selects how much of the 32K byte input buffer is set aside for reprinting a page when `Finish Page` or `Reprint Page` has been selected for the Paper Out Fault Action item (see above). The value

selected (0 to 28K bytes in 1K byte increments) should be set to accommodate the largest page expected, but not unnecessarily large since the larger this is set, the smaller the effective I/O buffer. The 8K-byte default setting should be large enough to hold most pages of text, but may not be large enough to hold more complex or graphic filled pages. If the page size selected is not large enough, the page will be broken as described under Paper Out Fault Action item above.

If the Paper Out Fault Action item is set to `Break Page`, the Reprint Page Size may be set to `0` to allow the largest possible I/O buffer.

Truncate Long Lines

```
Truncate Lines
           No
```

Possible Values: `Yes, No*`

When this item is set to `Yes`, long text lines that would wrap around to the next line will be terminated at the right margin column or the right usable edge of the platen, whichever is reached first. The remainder of the characters in the line are discarded. Graphics printing always truncates.

Bottom Paper Slew Rate
852si only

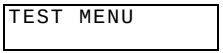
```
Bottom Slew
      Fast
```

Possible Values: `Normal, Fast*`

In the PrintMaster 852si, this item controls the speed of paper in the bottom paper path. When this item is set to Fast, paper motion will take place at 12 inches per second. When set to Normal, this speed is the same as the rear paper path. This setting may be necessary when using thick multi-part forms that tend to de-laminate or have bulky perforation “tents”.

TEST MENU

The TEST MENU is used to access some testing as well as some record keeping items. To access the test menu, enter Setup and press the MENU button until TEST MENU is displayed as shown below.



Next press the ALIGN/ITEM button to access the test modes available.

Print the Menus

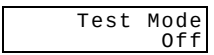
Possible Values: No*, Current Values

This item may be used to print a list of current values.

Current Values will print only the items relevant to the current printer configuration and their current values. This provides a means of record keeping or "backup", so that the values can be checked and restored in case an operator inadvertently changes one.

After setting this value, close lid and press ONLINE to begin printing. After printing is completed, the value of this item will automatically return to No. Note that once printing begins, taking the printer off line for any reason (ONLINE button pressed, ribbon lid opened, or a paper fault) will cause printing to be aborted.

Test Mode



Possible Values: Off*, Barber Pole,
Hex Dump, Demos

When this item is set to `Barber Pole`, the printer will print a rotating character pattern. Printing may be started and stopped with the ONLINE button.

When set to `Hex Dump`, the printer will print all received data in a special debug format, which may be used by programmers to solve software problems. For more information, refer to the Hex Dump section of the *PrintMaster 850 Series Programmer's Manual*.

Note the when in Barber Pole mode and Hex Dump mode, if the printer is taken OFFLINE during printing, the printer will remain in these modes. If the printer is put back ONLINE, printing will resume. To exit either of these modes, return to the `TEST MENU` and use the UP/DOWN arrow keys to set "`TEST MODE`" to OFF.

FORM CONSTRUCTION AND LAYOUT TIPS

Form Construction

Although the PrintMaster 850 Series printers have been designed to handle difficult forms, you may come across a form that does not feed reliably or provide adequate print quality on all copies.

One of the main causes of paper misfeeds is a form that is "tented". Tenting is a tent-like bulge at the perforation when forms are unfolded from the box. The printer allows a maximum form thickness of 0.025 inches, which a badly tented form may exceed.

Tenting is usually caused by glue drying on the perforation after the forms maker puts the forms into the box, or forms which are not glued at all. Forms with solid glue lines, which run vertically down the entire form, are the most susceptible. If you experience such a problem, request "interrupted glue line" forms from your vendor. This method stops the glue approximately three-quarters of the way down the form and then resumes gluing at the top of the next form. The gluing should not begin too far below the top of the form or pages of the form will be able to fan apart and be a potential cause of jamming.

Another area where not all forms are alike is in the quality of carbon paper used, or in the way carbonless inks are applied. If the back copies of your form are too light, request a quick-release carbon or a higher quality carbonless inking method.

Form Layout Considerations

When designing preprinted forms, the most common problem is forms that are designed "too tight". This means that boxes where data have to be printed are just barely large enough for the data, and that even the slightest misalignment will cause characters to be printed on at least one of the lines that form the box.

While the print alignment can be adjusted on the PrintMaster 850 Series printer to $1/100^{th}$ of an inch, this is often too much to expect of the forms manufacturer. Where the preprinted information is placed in respect to the tractor holes on the form often varies on every other form in a single box of forms, or from one box of forms to the next.

To help avoid this situation, create larger areas for data by allocating blank lines in the printed data for horizontal lines, and allocating blank columns for vertical lines. If this is not possible due to the amount of data that has to be

placed on the form, avoid using a dark color to form the preprinted lines and boxes. Use a lighter color, preferably other than a gray that will allow the printed characters to still be read if misalignment occurs.

MAINTENANCE AND TROUBLESHOOTING

Error Messages

This section provides a partial list of fatal errors. Fatal errors typically cannot be recovered from without the loss of data. In each case, ERROR is shown on the top line of the display and alternated with one of the following messages. Suggested solutions for each of these messages are listed to the right of each error message in the table, which follows. To restart the printer after a fatal error, press the ONLINE button. The printer will reset to the power-on state and any pending print data in the printer buffer is lost. If the suggested solution does not solve the problem, please refer to "Obtaining Service" on page 64.

Note that none of these messages flash on the display. Messages which are flashed on the display are discussed in the "**Common Error Conditions**" section on page 31.

Other errors which are not listed here or in "DAILY OPERATION" should be reported to the company where you purchased your printer, or to your nearest Authorized Service Center. If you do not know the name or number of your nearest Authorized Service Center, see "**Obtaining Service**" later in this section.

Error Message	Possible Solution
`Head Blocked?`	Check print head carriage area for obstructions.
`Head Gap`	Usually a result of a bad paper jam. Check for paper wedged in the print head nose shield area.
`I/O Overflow`	Make sure handshaking parameters set in the printer and at the host computer match each other. Make sure interface cables are wired correctly.
`I/O Parity Error`	Make sure parity setting in the printer and at the host computer matches each other.

Preventive Maintenance

Your PrintMaster 850 Series printer requires very little preventive maintenance. It is only suggested that you periodically clear out any excessive paper dust, paying particular attention to cleaning the sensor surfaces (at left tractor under the paper (rear) lid and at far left of carriage under the ribbon lid).

Also, the various bearings used in the PrintMaster 850 Series printers should not require any lubrication.

OBTAINING SERVICE

If your PrintMaster 850 Series printer should require service, please contact the company where you purchased the printer. If you do not know where the printer was purchased, please call 800-368-4636 to obtain the name

and number of your nearest Printek Authorized Service Center or to arrange for factory service.

Security Menu

The SECURITY MENU is for Information System managers who want to be able to set up a printer and then "lock out" operator changes to the various menus. This method of security may be set independently for the Align Print, the Forms menu, the Interface menu, or the Options menu.

When set to Edit Allowed, the user is allowed to make changes to any item in the menu selected. When set to View only, the operator can look at the settings, but cannot edit, or change the values. When set to Initialize, the printer will reset all values in that menu (and associated submenus) to the factory default values and security will be set back to Edit Allowed.

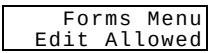
The SECURITY MENU is more difficult to enter than other menus. To be able to access this menu, first turn the printer off by holding the ONLINE button down for 5 seconds. Then hold the MENU button, press and release the ONLINE button, and then release the MENU button. After the printer has finished its power up self-tests, enter Setup and press the MENU button until SECURITY MENU is displayed on the top line. Next press the ALIGN/ITEM button to begin setting security.

ALIGN/ITEM

Possible Values: Edit Allowed, View Only, Initialize

This item selects whether values set using Align Print (see ALIGNING PRINT on page 29) can be edited or only viewed by the operator. `Initialize` will reset the Align Print values for all forms to zero.

Forms Menu



Possible Values: `Edit Allowed, View Only, Initialize`

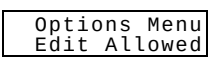
This item selects whether items in the `FORMS MENU` can be edited or only viewed by the operator. `Initialize` will reset the value of all the items for all forms to factory default values.

Interface Menu

Possible Values: `Edit Allowed, View Only, Initialize`

This item selects whether items in the `INTERFACE MENU` can be edited or only viewed by the operator. `Initialize` will reset the value of all the items for all interfaces to factory default values.

Options Menu



Possible Values: `Edit Allowed, View Only, Initialize`

This item selects whether items in the `OPTIONS MENU` can be edited or only viewed by the operator. `Initialize` will reset the value of all the items in the options menu to factory default values.

USING REMOTE SETUP

The PrintMaster 850 Series printers may be completely configured for operation by using the front panel buttons to access the printer setup menus. In addition, many of the items that can be configured via the front panel setup menus can also be configured remotely as described in this chapter.

Remote Setup via Windows Application

Printek provides a remote setup program for Windows 95, 98, 2000 and NT users. This provides a convenient method for graphically configuring the printer. Visit www.printek.com to download the free application.

Remote Setup via Generic Text File

Remote setup commands are placed in a remote setup file on a host computer. This file may then be sent to the printer. The remote setup file must be a text only file* with each line terminated by a Line Feed (LF) character.

The available commands listed below are shown with a combination of upper and lower case letters to enhance readability. However, the commands are not case sensitive. All characters are converted to upper case before processing (except for form names, which are contained in double quotes). White space may also be inserted to enhance readability; it will be stripped from the commands before processing.

Each line of the file is processed individually, and must conform to one of four possible formats:

1. A blank line (ignored).
2. A comment line, which begins with a semicolon "`;`" (ignored).
3. A heading line, which is enclosed in square brackets "`[]`".

4. An item setup line, of the format `item=value`.

Each item setup line must appear under the appropriate heading line. The first heading line in the file must be `[BeginPrintekSetup]`. The last heading line in the file must be `[EndPrintekSetup]`. All other heading lines and item setup lines are optional.

If any errors exist in the remote setup file, no changes will be made to the printer configuration. When possible, the printer will indicate the line number in the file where the first error occurred. Counting of lines begins with 1 at the `[BeginPrintekSetup]` heading line. Any lines preceding this will not be processed, and will not be counted.

Before sending the remote setup file to the printer, minimal setup is required via an escape sequence. The I/O interface to be used for remote setup must be configured appropriately to communicate with the host system, and printer must be placed in remote setup mode. This is done by sending a 3-byte escape sequence to the printer. This sequence is ESC ESC ; or hexadecimal 1B 1B 3B. This sequence may be included at the beginning of the text file.

After this is done, the printer will reset, beep the bell to alert the operator, and display the message `Waiting For Remote Setup`". The remote setup file may now be sent to the printer.

After the printer receives the remote setup file (without error), all specified configuration changes will be made, the printer will reset. When this reset is complete, the printer will be ready for normal interaction with the host system. Errors in the setup file are handled as Fatal errors. Test the setup file before sending it to a remote printer.

The available heading lines, and item setup lines, are documented below. Note that all the legal values are shown for each item, but in use only one value may be supplied in the setup file. An example file follows these definitions.

*Note that the 3-byte escape sequence can be included as the first 3 bytes in the remote setup file.

Remote Setup Line Definitions

```
[BeginPrintekSetup]
AlignPrint=FactoryDefaults
Forms=FactoryDefaults
Interfaces=FactoryDefaults
Options=FactoryDefaults
Security=FactoryDefaults

[Form0] ... [Form9]
MovePrintLeft=0.00 ... 9.99
MovePrintRight=0.00 ... 9.99
MovePrintUp=0.00 ... 9.99
MovePrintDown=0.00 ... 9.99
FormName="UPTO16CHARACTERS"
Tractor Path=Rear, Bottom, Bottom=Rear (852si
only)
LinesPerInch=6,8
FormLength=1 ... 227
TopMargin=0 ... 226
BottomMargin=0 ... 226
CharactersPerInch=10,12,13.3,15,16.74,17.14,2
0
LeftMargin=0 ... 166
RightMargin=4 ... 170
Font=Epson_FX_FD,Epson_FX_DF,Epson_FX_LQ,

PC_English_FD,PC_English_DF,PC_English_LQ,
     PC_Latin2_FD,PC_Latin2_DF,PC_Latin2_LQ,
     DEC_LA120_FD,DEC_LA120_DF,DEC_LA120_LQ,
     EBCDIC_FD,EBCDIC_DF,EBCDIC_LQ,
     OCR_A_FD,OCR_B_FD
DraftSpeed=Normal,Fast
ImpactForce=Normal,High
Language=USA,France,Germany,England,Denmark,
     Sweden,Italy,Spain,Japan,Finland
Zero=Normal,Slashed
Unidirectional=No,Yes

[SerialInterface]
```

```
Emulation=ANSI_X3.64,Epson,IBM_Proprinter,
     DEC_LA120,TTY,Printek
AutoCR=Off,On
AutoLF=Off,On
HostFFatTOF=No,Yes
Characters=Control,Printable
MinimumBuffer=No,Yes
BaudRate=110,150,300,600,1200,2400,
     4800,9600
DataBits=8,7
StopBits=1,2
Parity=None,Even,Odd
BusyPolarity=Low,High
DTR=Power,Online,Busy
XON/XOFF=Off,On
ETX/ACK=Off,On

[ParallelInterface]
Emulation=ANSI_X3.64,Epson,IBM_Proprinter,
     DEC_LA120,TTY,Printek
AutoCR=Off,On
AutoLF=Off,On
HostFFatTOF=No,Yes
Characters=Control,Printable
MinimumBuffer=No,Yes


[Options]
MaxFormAllowed=0 ... 9
AutoScroll=Off,1 ... 15
PaperOutFault=BreakPage,ReprintPage,FinishPag
e
PageSize=0K ... 28K
TopOfBarcode+Off,On
TopOfOversized=Off,On
IngnoreCharacter=Off,On
CharToIgnore=0 ... 255
TruncateLines=No,Yes
BottomSlew = Fast, Normal (852si only)

[Security]
```

```
AlignPrint=ViewOnly,EditAllowed
FormsMenu=ViewOnly,EditAllowed
InterfaceMenu=ViewOnly,EditAllowed
OptionsMenu=ViewOnly,EditAllowed

[EndPrintekSetup]
```

Remote Setup Example File

The following example will set up three forms. Before the forms are set up, "AlignPrint" and all "Forms" will be reset to their factory default values so that only the "non-default" values have to be set.

The first form will begin printing one line from the top-of-form, be named "CHECKS", have a form length of 42 lines (7 inches at 6 LPI), and use the Epson FX Draft font.

The second form will begin printing two characters (at 10 CPI) from the left edge and two lines (at 6 LPI) from the top edge of the form. The name will be "INVOICES" and will print using the Epson FX Draft font.

The third form will begin printing at the left margin (at 12 CPI), two lines (at 8 LPI) from the top edge of the form. The name will be "REPORTS", and printing will be at 8 LPI with a form length of 8½ inches.

```
;     Example setup file for three forms.

[BeginPrintekSetup]
AlignPrint=FactoryDefaults
Forms=FactoryDefaults
[Form0]
MovePrintDown=0.17
FormName="CHECKS"
FormLength=42
Font=Epson_FX_DF
[Form1]
MovePrintRight=0.20
MovePrintDown=0.33
FormName="INVOICES"
```

```
Font=Epson_FX_DF
[Form2]
MovePrintDown=0.25
FormName="REPORTS"
LinesPerInch=8
FormLength=68
CharactersPerInch=12
[EndPrintekSetup]
```

USING THE OPTIONAL SETUP MODULE

Introduction

The optional Setup Module is a small cartridge that plugs directly into the RS-232 Serial connector on the rear of any PrintMaster 850 Series printer. This module is used to store a second copy of the current Setup configuration of the printer. This may then be used to restore settings after a printer is serviced or to copy the same configuration settings to another printer. These uses are discussed immediately following the installation instructions.

Setup Module Installation

To install the Setup Module, perform the following steps.

1. Turn off power to the printer.
2. Disconnect the cable plugged into the serial port if one is present.
3. Plug the Setup Module into the serial port.
4. If a cable was present in step 2, reconnect it to the connector on the rear of the Setup Module.
5. Turn on power to the printer.
6. If this is not the first time the Setup Module has been connected to a printer, the printer will proceed with step 7.

   If this is the first time the Setup Module has ever been attached to a printer, the printer will temporarily display the following message and

the ONLINE indicator will be yellow. When the message disappears, installation is complete and the printer will continue with its normal power up procedure.

```
Initializing
Setup Module
```

7. The printer will now compare the configuration data in its internal memory to the data in the Setup Module. If the data are not an exact match, the printer will proceed with step 8.

   If the data in the printer and the data in the module are an exact match, installation is complete and the printer will complete its power up procedure.

8. The printer has now determined that the data in the Setup Module does not exactly match the data in the printer's internal memory. The printer will now display the following message, the ONLINE indicator will flash yellow and the bell will beep to get the operator's attention. Proceed to step 9.

```
New Setup
 Module
Detected
```

9. Press the ONLINE button. The printer will now stop flashing the ONLINE indicator (will remain yellow) and display the following message. You must now make one of the selections as described below.

```
LOAD=READ
UNLOAD=WRITE
```

If you wish to copy the Setup data to the printer from the Setup Module, press the LOAD button. The printer will display the following message and will now be configured according to the information that was in the Setup Module.

```
Copying Setup
  to Printer
```

If you wish to copy the Setup data *to* the Setup Module from the printer, press the UNLOAD button. The printer will display the next message and the Setup Module will now contain a copy of the Setup information in the printer.

```
Copying Setup
  to Module
```

After one of the above selections is made, installation is complete, the ONLINE indicator will be turned off and the printer will finish its power up procedure. If you are not sure which button to press, refer to either of the following sections for more information.

Using the Setup Module to Maintain a Backup Copy of Setup Information for a Single Printer

This use of the Setup Module provides a method of automatically maintaining a copy of the Setup configuration in case a printer should ever need to be repaired or if it is replaced under a service contract.

To use the Setup Module in this manner, you only need to perform the installation procedure once and then forget about it. The printer will automatically keep the Setup Module updated with any changes that are made to the printer using the front panel Setup as described in "PRINTER CONFIGURATION" beginning on page 34. As long as the Setup Module remains on the same printer, the installation procedure will not have to be repeated.

If the printer does someday require repair or replacement, simply perform the installation procedure again on the repaired or replacement printer and

in step 9 press the LOAD button. Depending upon what was repaired in the printer, the Setup information in the printer's memory may not have been changed. In this case the printer will power up normally and no message will be displayed.

Using the Setup Module to Copy Setup Data From One Printer to Another

This use of the Setup Module is beneficial when installing or updating several printers that need to be configured exactly the same. To do this, you will need to perform the installation procedure once for each printer.

First, install the Setup Module on the printer where the Setup data is to be copied from. If the printer determines that steps 8 and 9 are required, choose "Copy to Module" in step 9 and allow the printer's power up procedures to complete. If any additional changes need to be made to the configuration of this printer, enter Setup and make them before removing the Setup Module. Any changes made will automatically be stored both in the printer's internal memory and the Setup Module.

You may now power off the printer and remove the Setup Module. Remember to reconnect the serial cable if one was attached.

Now perform the installation procedure on each of the printers that are to be configured the same as the first. In step 9 be sure to press the LOAD button to copy data to the printer. After the Setup Module is removed, remember to reconnect the serial cable if one was attached.

Note: Setup modules for Printek FormsMaster 8000 Series printers and PrintMaster 850 Series printers are not interchangeable. Data backup will not take place if the modules are used on the wrong printer.

PRINTER RESET CONDITIONS

The following list describes conditions that are assumed whenever power is applied to the printer, changes have been made in MENU, or a reset escape sequence is received (when the printer is operating in an emulation mode that supports such a sequence).

This list includes all variables that you can modify for all emulations, even though some emulations cannot modify all of the variables shown. Refer to the appropriate section of this manual for the emulation you are using.

Variable	Reset Condition
character pitch	according to current form setup
left margin	according to current form setup
right margin	according to current form setup
line pitch	according to current form setup
form length	according to current form setup
top margin	according to current form setup
bottom margin	according to current form setup
font	according to current form setup
impact mode	according to current form setup
language	according to current form setup
normal/slashed zero	according to current form setup
auto cut mode	according to current form setup
unidirectional mode	according to current form setup
top of form	set to current position
text in an incomplete line	discarded
input buffer	cleared (unless reset from host)
control of data bit 8	accepted as received
control character symbols	according to interface setup
italics	off
double high	off
double strike	off
double wide	off
emphasized	off
superscript/subscript	off
underline	off
horizontal tabs	to every eight columns
vertical tabs	cleared

CONTROL CODE AND ESCAPE SEQUENCE SUMMARIES

GENICOM 3840 and 3410 Emulation

BEL	Bell
BS	Backspace
CR	Carriage Return
CSI	Control Sequence Introducer
ESC D	Line Feed
ESC E	New Line
ESC ESC n	Select Software Interface n
ESC H	Set Horizontal Tab
ESC J	Set Vertical Tab
ESC K	Subscript Printing
ESC L	Superscript Printing
ESC P <graphics> ESC \	6 Pin Graphics Mode
ESC [(p1);(p2)<SP>B	Oversize Font / Graphic Size Modification
ESC [(p1);(p2)<SP>G	Line / Character Spacing
ESC [(p)`	Horizontal Position Absolute
ESC [(p)a	Horizontal Position Relative
ESC [(p)d	Vertical Position Absolute
ESC [(p)e	Vertical Position Relative
ESC [(p1);(p2)f	Vertical and Horizontal Position Absolute
ESC [(Ps)g	Clear Tabs
ESC [(p)h	Set Auto CR on LF
ESC [(p)j	Horizontal Position Backwards
ESC [(p)k	Vertical Position Backwards
ESC [(p)l	Reset Auto CR on LF
ESC [(p1);...(pn)m	Font and Print Modes
ESC [(p1)p	Paper Path
ESC [(p1)q	Graphics Density
ESC [(p1);(p2);(p3)r	Forms Setup
ESC [(p1);(p2)s	Margins Setup

ESC [(p1)t	Oversized Font / Barcode Mode
ESC [(p1);(p2);...(p22)u	Set Horizontal Tabs at Certain Positions
ESC [(p1);(p2);...(p12)v	Set Vertical Tabs at Certain Positions
ESC [(p1);(p2)<SP>{	Paper Shear
ESC [(p1);(p2);...(p12)}	Set Barcode Parameter
ESC]6;4;(p3);(p4)ESC\	Straps and Options
ESC c	Reset
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
HTS	Set Horizontal Tab Stop
IND	Index
LF	Line Feed
NEL	Next Line
PLD	Partial Line Down (Subscript)
PLU	Partial Line Up (Superscript)
VT	Vertical Tab
VTS	Set Vertical Tab Stop

ANSI X3.64 Emulation

BEL	Bell
BS	Backspace
CR	Carriage Return
CSI	Control Sequence Introducer
ESC D	Line Feed
ESC E	New Line
ESC ESC *n*	Select Software Interface *n*
ESC H	Set Horizontal Tab Stop
ESC J	Set Vertical Tab Stop
ESC K	Partial Line Down
ESC L	Partial Line Up
ESC [*n1* ; *n2* SP G	Set Character and Line Spacing
ESC [*n* `	Absolute Horizontal Tab
ESC [*n* a	Relative Horizontal Tab
ESC [*n* d	Absolute Vertical Tab
ESC [*n* e	Relative Vertical Tab
ESC [g	Clear Horizontal Tab Stop
ESC [0 g	Clear Horizontal Tab Stop

ESC [1 g	Clear Vertical Tab Stop
ESC [2 g	Clear All Horizontal Tab Stops
ESC [3 g	Clear All Horizontal Tab Stops
ESC [4 g	Clear All Vertical Tab Stops
ESC [20 h	Select Automatic Carriage Return
ESC [20 l	Cancel Automatic Carriage Return
ESC [*n* m	Select Graphic Rendition
ESC c	Reset
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
HTS	Set Horizontal Tab Stop
IND	Line Feed
LF	Line Feed
NEL	New Line
PLD	Partial Line Down
PLU	Partial Line Up
VT	Vertical Tab
VTS	Set Vertical Tab Stop

Epson FX Emulation

BEL	Bell
BS	Backspace
CAN	Cancel Line
CR	Carriage Return
DC2	Cancel Condensed Mode
DC3	Deselect Printer
DC4	Cancel Double-Wide Mode (one line)
DEL	Delete Character
ESC ! *n*	Master Print Mode Select
ESC #	Cancel MSB Control
ESC $ *n1 n2*	Absolute Horizontal Tab
ESC * *m n1 n2 data*	*m* DPI Graphics
ESC - *n*	Underline Mode
ESC 0	Select 8 LPI
ESC 1	Set Line Spacing to 7/72"
ESC 2	Select 6 LPI
ESC 3 *n*	Set Line Spacing to *n*/216"
ESC 4	Select Italic Mode
ESC 5	Cancel Italic Mode
ESC 6	Enable Printing of High Symbols
ESC 7	Disable Printing of High Symbols
ESC <	Unidirectional Mode (one line)

ESC =	Set MSB to 0
ESC >	Set MSB to 1
ESC @	Reset
ESC A *n*	Set Line Spacing to *n*/72"
ESC B *n1 n2 ... nx* NUL	Set Vertical Tab Stops
ESC C NUL *n*	Set Form Length in Inches
ESC C *n*	Set Form Length in Lines
ESC D *n1 n2 ... nx* NUL	Set Horizontal Tab Stops
ESC E	Select Emphasized Mode
ESC EM *n*	Load Form
ESC ESC *n*	Select Software Interface *n*
ESC F	Cancel Emphasized Mode
ESC G	Select Double-Strike Mode
ESC H	Cancel Double-Strike Mode
ESC I *n*	Printing of Low Symbols
ESC J *n*	Variable Distance Line Feed
ESC K *n1 n2 data*	60 DPI Graphics
ESC L *n1 n2 data*	120 DPI Graphics
ESC M	Select 12 CPI
ESC N *n*	Set Perforation Skip
ESC O	Cancel Perforation Skip
ESC P	Select 10 CPI
ESC Q *n*	Set Right Margin
ESC R *n*	Select International Character Set
ESC S *n*	Select Subscript or Superscript Mode
ESC SI	Select Condensed Mode
ESC SO	Select Double-Wide Mode (one line)
ESC T	Cancel Subscript and Superscript Mode
ESC U *n*	Unidirectional Mode
ESC W *n*	Double-Wide Mode
ESC Y *n1 n2 data*	High Speed 120 DPI Graphics
ESC Z *n1 n2 data*	High Speed 240 DPI Graphics
ESC \ n1 n2	Relative Horizontal Tab
ESC g	Select 15 CPI
ESC j *n*	Variable Distance Reverse Line Feed
ESC k *n*	Select Font
ESC l *n*	Set Left Margin
ESC t *n*	Character Table (Italic vs. Extended)
ESC w *n*	Double-High Mode
ESC x *n*	Select Draft or Letter Quality
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
SI	Select Condensed Mode
SO	Select Double-Wide Mode (one line)

VT	Vertical Tab
XOFF	Deselect Printer

IBM Proprinter Emulation

BEL	Bell
BS	Backspace
CAN	Cancel Line
CR	Carriage Return
DC2	Select 10 CPI
DC4	Cancel Double-Wide Mode (one line)
ESC - *n*	Underline Mode
ESC 0	Select 8 LPI
ESC 1	Set Line Spacing to 7/72"
ESC 2	Start Line Spacing
ESC 3 *n*	Set Line Spacing to *n*/216"
ESC 4	Set Top of Form
ESC 5 *n*	Automatic Line Feed
ESC 6	Select Character Set 2
ESC 7	Select Character Set 1
ESC :	Select 12 CPI
ESC A *n*	Set Line Spacing to *n*/72"
ESC B *n1 n2 ... nx* NUL	Set Vertical Tab Stops
ESC C NUL *n*	Set Form Length in Inches
ESC C *n*	Set Form Length in Lines
ESC D *n1 n2 ... nx* NUL	Set Horizontal Tab Stops
ESC E	Select Emphasized Mode
ESC ESC *n*	Select Software Interface *n*
ESC F	Cancel Emphasized Mode
ESC G	Select Double-Strike Mode
ESC H	Cancel Double-Strike Mode
ESC I *n*	Select Print Mode
ESC J *n*	Variable Distance Line Feed
ESC K *n1 n2 data*	60 DPI Graphics
ESC L *n1 n2 data*	120 DPI Graphics
ESC N *n*	Set Perforation Skip
ESC O	Cancel Perforation Skip
ESC Q *n*	Deselect Printer
ESC R	Reset Horiz. and Vertical Tab Stops
ESC S *n*	Select Subscript or Superscript Mode
ESC SI	Select Condensed Mode
ESC SO	Select Double-Wide Mode (one line)
ESC T	Cancel Subscript and Superscript Mode

ESC U *n*	Unidirectional Mode
ESC W *n*	Double-Wide Mode
ESC X *n1 n2*	Set Left and Right Margin
ESC Y *n1 n2 data*	High Speed 120 DPI Graphics
ESC Z *n1 n2 data*	High Speed 240 DPI Graphics
ESC [@ *n1 n2 m1 m2 m3 m4*	Double-High Mode
ESC \ *n1 n2*	Print Characters
ESC ^ *n*	Print Single Character
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
SI	Select Condensed Mode
SO	Select Double-Wide Mode (one line)
VT	Vertical Tab

LA-120/210 Emulation

BEL	Bell
BS	Backspace
CR	Carriage Return
CSI	Control Sequence Introducer
DEL	Delete
ESC (*a*	Select International Character Set
ESC 1	Set Horizontal Tab Stop
ESC 2	Clear All Horizontal Tab Stops
ESC 3	Set Vertical Tab Stop
ESC 4	Clear All Vertical Tab Stops
ESC D	Line Feed
ESC E	New Line
ESC ESC *n*	Select Software Interface *n*
ESC H	Set Horizontal Tab Stop
ESC J	Set Vertical Tab Stop
ESC [	Control Sequence Introducer
ESC [*n* `	Absolute Horizontal Tab
ESC [*n* a	Relative Horizontal Tab
ESC [c	Printer Identification
ESC [0 c	Printer Identification
ESC [*n* d	Absolute Vertical Tab
ESC [*n* e	Relative Vertical Tab
ESC [g	Clear Horizontal Tab Stop
ESC [0 g	Clear Horizontal Tab Stop
ESC [1 g	Clear Vertical Tab Stop
ESC [2 g	Clear All Horizontal Tab Stops

ESC [3 g	Clear All Horizontal Tab Stops
ESC [4 g	Clear All Vertical Tab Stops
ESC [20 h	Select Automatic Carriage Return
ESC [20 l	Cancel Automatic Carriage Return
ESC [*n* m	Select Graphic Rendition
ESC [*n1* ; *n2* r	Set Top and Bottom Margins
ESC [*n1* ; *n2* s	Set Left and Right Margin
ESC [*n* t	Set Form Length in Lines
ESC [*n1* ; *n2* ; ... *nx* u	Set Horizontal Tab Stops
ESC [*n1* ; *n2* ; ... *nx* v	Set Vertical Tab Stops
ESC [*n* w	Set Character Spacing
ESC [*n* z	Set Line Spacing
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
HTS	Set Horizontal Tab Stop
IND	Line Feed
LF	Line Feed
NEL	New Line
VT	Vertical Tab
VTS	Set Vertical Tab Stop

Simple TTY Emulation

BEL	Bell
BS	Backspace
CR	Carriage Return
ESC ESC *n*	Select Software Interface *n*
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab

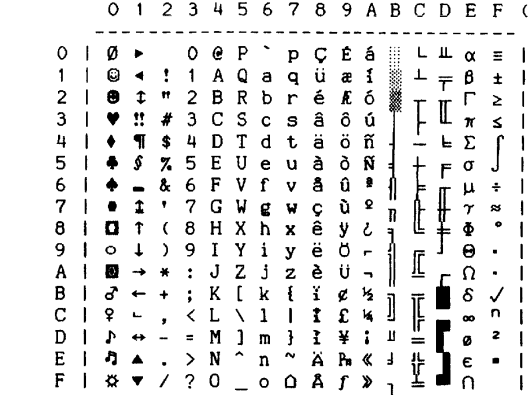
Printek Emulation

BEL	Bell
BS	Backspace
CR	Carriage Return
DC3	Deselect Printer
ESC # *m n1 n2 data*	*m* DPI Graphics

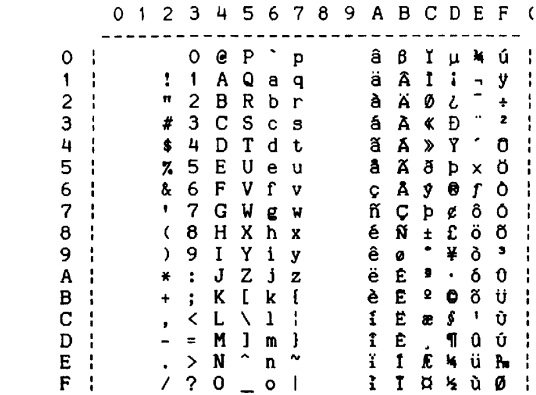
ESC %	Line Feed Boundary
ESC * *m n1 n2 data*	*m* DPI Graphics
ESC @	Reset
ESC Á *n*	Automatic Modes
ESC D *n*	Double-Strike Mode
ESC E *n*	Emphasized Mode
ESC ESC *n*	Select Software Interface *n*
ESC F *n*	Select Font
ESC FF *n*	Set Form Length in Lines
ESC G *n*	Modify Print Head Gap
ESC H *n1 n2*	Set Left and Right Margin
ESC HT *n1 n2 ... nx* NUL	Set Horizontal Tab Stops
ESC I *n*	Set Print Head Force
ESC L *n*	Load Form
ESC LF *n*	Set Line Spacing to *n*/288"
ESC Q *n*	Select Font Quality
ESC R	Reset Horiz. and Vertical Tab Stops
ESC S *n*	Select Script Modes
ESC SP *n*	Set character Spacing
ESC U *n*	Unidirectional Mode
ESC V *n1 n2*	Set Top and Bottom Margins
ESC VT *n1 n2 ... nx* NUL	Set Vertical Tab Stops
ESC W *n*	Double-Wide Mode
ESC \ *n*	Print Single Character
ESC ^	Reverse Line Feed
ESC _ *n*	Underline Mode
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
XOFF	Deselect Printer

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	(MSB)
0	à	§		0	@	P	`	p	à	§		*0*	*@*	*P*	`	*p*	
1	è	ß	!	1	A	Q	a	q	è	ß	*!*	*1*	*A*	*Q*	*a*	*q*	
2	ù	£	"	2	B	R	b	r	ù	£	*"*	*2*	*B*	*R*	*b*	*r*	
3	ò	æ	#	3	C	S	c	s	ò	æ	*#*	*3*	*C*	*S*	*c*	*s*	
4	ì	Ø	$	4	D	T	d	t	ì	Ø	*$*	*4*	*D*	*T*	*d*	*t*	
5	°	ø	%	5	E	U	e	u	°	ø	*%*	*5*	*E*	*U*	*e*	*u*	
6	£	¨	&	6	F	V	f	v	£	¨	*&*	*6*	*F*	*V*	*f*	*v*	
7	¡	Ä	'	7	G	W	g	w	¡	Ä	*'*	*7*	*G*	*W*	*g*	*w*	
8	¿	Ö	(	8	H	X	h	x	¿	Ö	*(*	*8*	*H*	*X*	*h*	*x*	
9	Ñ	Ü	)	9	I	Y	i	y	Ñ	Ü	*)*	*9*	*I*	*Y*	*i*	*y*	
A	ñ	ä	*	:	J	Z	j	z	ñ	ä	***	*:*	*J*	*Z*	*j*	*z*	
B	¤	ö	+	;	K	[	k	{	¤	ö	*+*	*;*	*K*	*[*	*k*	*{*	
C	₧	ü	,	<	L	\	l	¦	₧	ü	*,*	*<*	*L*	**	*l*	*¦*	
D	Å	É	-	=	M	]	m	}	Å	É	*-*	*=*	*M*	*]*	*m*	*}*	
E	å	é	.	>	N	^	n	~	å	é	*.*	*>*	*N*	*^*	*n*	*~*	
F	ç	¥	/	?	O	_	o	Ø	ç	¥	*/*	*?*	*O*	*_*	*o*	*Ø*	
(LSB)																	

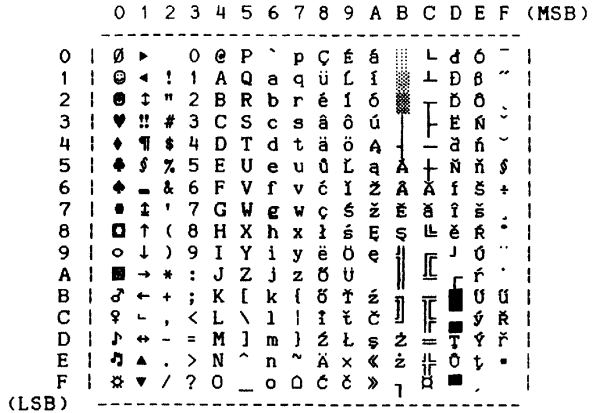
Epson FX Font Character Set



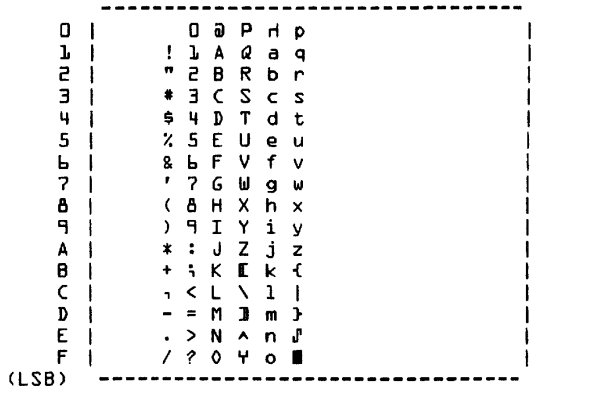
PC Font Character Set



EBCDIC Font Character Set



PC Latin 2 (Slavic) Font Character Set



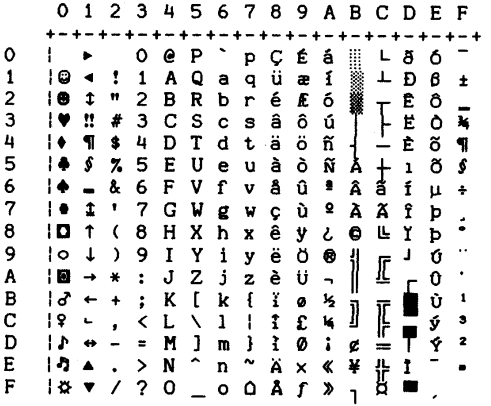
OCR-A Font Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p								
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	\	l	|								
D			-	=	M	]	m	}								
E			.	>	N	^	n	~								
F			/	?	O	_	o	■								

OCR-B Font Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		►		0	@	P	`	p	Ç	É	á	▒	└	ð	Ó	¯
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	▒	┴	Ð	ß	±
2	☻	↕	"	2	B	R	b	r	é	Æ	ó	▒	┬	Ê	Ô	‗
3	♥	‼	#	3	C	S	c	s	â	ô	ú	┤	├	Ë	Ò	¾
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	È	õ	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	Á	┼	€	Õ	§
6	♠	▬	&	6	F	V	f	v	å	û	ª	Â	ã	f	µ	÷
7	•	↨	'	7	G	W	g	w	ç	ù	º	À	Ã	î	þ	¸
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	©	╚	Ï	Þ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	®	╣	╔	┘	Ú	¨
A	◙	→	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Û	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	╗	╦	█	Ù	¹
C	♀	∟	,	<	L	\	l	|	î	£	¼	╝	╠	▄	ý	³
D	♪	↔	-	=	M	]	m	}	ì	Ø	¡	¢	═	¦	Ý	²
E	♫	▲	.	>	N	^	n	~	Ä	×	«	¥	╬	Ì	¯	■
F	☼	▼	/	?	O	_	o	⌂	Å	ƒ	»	┐	¤	■	´	

ML Euro (858)



ML (850)

SPECIFICATIONS

OCR-A Font Character Set PRINT SPEEDS

Text Modes	Speed
Fast Draft	530 cps
Draft	400 cps
Fast Draft High Impact	250 cps
Draft High Impact	200 cps
Letter Quality	100 cps
Optical Quality	65 cps

Graphics Modes	Speed (up to) *
8 Wire Graphics	19,200 dps
8 Wire Fast Graphics	25,600 dps
9 Wire Graphics	21,600 dps
9 Wire Fast Graphics	28,800 dps

CHARACTER MATRIX

Fast Draft 7x9 in 9x9 cell.
Draft 9x9 in 12x9 cell.
Letter Quality 18x18 in 24x18 cell.
Optical Quality 27x18 in 36x18 cell.

GRAPHICS DENSITY

60 to 240 dpi horizontally x 72 dpi vertically. *

CHARACTER SETS

Epson FX fast draft, draft and letter quality.
IBM Proprinter fast draft, draft and letter quality.
EBCDIC fast draft, draft and letter quality.
Latin II (Slavic) fast draft, draft, and letter quality.
OCR-A optical quality.
OCR-B optical quality.
MultiLingual (Code Page 858) fast draft, draft, and letter quality.
MultiLingual (Code Page 850) fst draft, draft, and letter quality.

CHARACTER SPACING

5, 6, 6.7, 7.5, 8.4, 8.6, 10, 12, 13.3, 15, 16.7, 17.1, and 20 cpi. *

LINE SPACING

6 lpi, 8 lpi, or programmable in 1/216th or 1/288th of an inch. *

LINE LENGTH

8.5 inches.

CONTROL CODE AND ESCAPE SEQUENCE EMULATIONS

Genicom 3840
Genicom 3410
ANSI X3.64
Epson FX
IBM Proprinter
DEC LA-120 and LA-210
Simple TTY
Printek
Basic Bar Code

PAPER HANDLING

Rear feed or optional bottom feed; zero tear off distance; paper out/paper jam detection; fan fold, continuous forms, edged punched.
Paper width: 2.5 to 8.5 inches.
Paper Slew Rate: 6 inches per second rear feed, 6 or 12 inches per second bottom feed.

RIBBON

15,000,000 character, mobius loop cartridge.

SPECIAL FORMS HANDLING FEATURES

Print up to five part forms (.025" maximum thickness) (Nine part forms for "si" models
Easy access to tractors.
Front panel and host form selection.
Automatic head gap.
Paper out sensing.
Paper motion sensing.
Page reprint.
Automatic path switching for same form in more than one path (with optional bottom feed unit).

Nonvolatile memory for ten form setups. Parameters for each form include: custom form name, tractor path (only with optional bottom feed unit), cpi, left margin, right margin, lpi, form length, top margin, bottom margin, font, character impact mode, language*, slashed or nonslashed zero, and unidirectional printing.

COMPUTER INTERFACES

Centronics compatible Parallel.

Asynchronous RS-232: 110 to 9,600 baud; Even, Odd, or No parity; 7 or 8 data bits; 1 or 2 stop bits; XON/XOFF, ETX/ACK, and Hardware handshake.

Optional 10/100 BaseT Ethernet Interface

Input Buffer Size: 32K bytes.

OPERATOR CONTROLS/INDICATORS

Normal Operating Mode

Indicators: Online/Status LED; 2x16 character LCD for current form selection, on/off line status and error descriptions.
Controls: Online, Load/Feed, Unload/Change, Align/Item.

Setup Mode

Indicators: Online/Status LED indicates Setup mode is active.

Controls: Menu, Submenu, Items, Up/Down Arrows.

Setup Features: Forms Menu for setting form and printing parameters, Interface Menu for setting all I/O parameters, Option Menu for setting/installing option parameters, Test Menu, and Security Menu for disabling changes to interface, form, Align Print, and option settings.

RELIABILITY

Unit automatically measures and sets operating parameters each time unit is powered on.

MTBF 10,000 hours on electronics, 50% duty cycle. 100% duty cycle for "si" models.

Print head life of 500,000,000 draft mode (or equivalent) characters.

Printer life excluding print head of 1,000,000 pages.

WARRANTY

Printer: One year limited warranty for defects in materials and/or workmanship.

Print Head: 500 million draft equivalent character life. One year limited warranty for defects in materials and/or workmanship. Limited print head warranty may be extended to a two years with the use of only Printek® brand ribbons.

ENVIRONMENTAL SPECIFICATIONS

Power requirements: 100-250 VAC, 50-60 Hz Autoswitching.

Power consumption: 18 W non-printing, 60 W printing, Energy Star compliant.

Audible noise: ≤55 dBA

Operating Temperature: 50°F to 95°F.

Relative Humidity: 20% to 80% non-condensing.

Physical Size: 6.4" High (9.9" High for "si" models) x 17.75" Wide x 16.25" Deep.

Weight: 33 lbs (~ 38 lbs ship weight). 42 lbs for "si" model

OPTIONS

Ethernet 10/100BaseT Interface
Setup Module
Printstand

* May be emulation dependent.

Specifications subject to change without notice.

GLOSSARY OF TERMS

ANSI	American National Standards Institute.
ASCII	American Standard Code for Information Interchange.
baud rate	The bit rate at which characters are transmitted over a serial interface.
binary	Base two numbering system. Digits are represented by the characters 0 and 1.
bit	A single binary digit.
control code	A single, non-printing character, which is used to control the configuration or operation of the printer.
character pitch	The horizontal spacing of characters. Measured in cpi.
cpi	Characters-per-inch.
cps	Characters-per-second.
current line	The line upon which the next character will be printed.
current print position	The column on the current line where the next character will be printed.
default	Value or configuration that is assumed when the printer is turned on or reset.
DF	Draft Font.

dpi	Dots-per-inch. Generally used to refer to graphics density or resolution.
draft	Refers to the draft font.
EBCDIC	Extended Binary Coded Decimal Interchange Code.
escape sequence	String of characters beginning with the escape (ESC) character, which is used to control the configuration or operation of the printer. The characters, which are part of this string, are not printed.
fast draft	Refers to the fast draft font.
FD	Fast Draft.
font	A group of characters of a given shape or style.
hexadecimal	Base sixteen numbering system. Digits are represented by the characters 0 through 9 and A through F.
interface	Generally refers to the connection between the printer and the host computer. May also be used in reference to the user interface at the control panel of the printer.
LCD	Liquid-Crystal Display.
LED	Light-Emitting Diode.
line pitch	The vertical spacing of characters. Measured in lpi.
lpi	Lines-per-inch.
LQ	Letter Quality.
MSB	Most-significant bit or byte. In a character, this refers to bit seven (of 0 to 7).

octal	Base eight numbering system. Digits are represented by the characters 0 through 7.
offline	Refers to the state of the printer when the ONLINE indicator is not solid green and the printer does not respond to the host computer.
online	Refers to the state of the printer when the ONLINE indicator is solid green and the printer able to respond to the commands and text received from the host computer.
OQ	Optical Quality.
parity	A method used for detecting errors within a single character transmitted or received via an interface.
reset	Initialization of various operating parameters of the printer to the value or state assumed when the printer is powered on (default value).
top of form	The vertical position where the first line is printed on the paper. Also the position the paper is advanced to when a form feed (FF) character is received from the host or the FORM FEED button is pressed on the printer's control panel.
tractors	Devices which control the movement of the paper through the printer.